



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/619,919 | 07/15/2003 | Stephen G. Perlman | 08258.P008C | 7151 |
| 27660 7590 01/06/2009 THE LAW OFFICES OF BRADLEY J. BEREZNAK 800 WEST EL CAMINO REAL SUITE 180 MOUNTAIN VIEW, CA 94040 | | | | |
| EXAMINER | | | | |
| MILLS, DONALD L. | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 2416 | | | | |
| MAIL DATE | | DELIVERY MODE | | |
| 01/06/2009 | | PAPER | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/619,919

Applicant(s)

PERLMAN, STEPHEN G.

Examiner

DONALD L. MILLS

Art Unit

2416

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 28-46 is/are pending in the application.
- 4a) Of the above claim(s) 37-46 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 28-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/ISD)
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date 08/11/2008

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 28-36 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claim 28, the claim specifies *testing the channel for reliability by sending data that includes real-time audiovisual content from the first repeater to a next repeater in the chain at a throughput of at least 11 Mbps... allocating the channel for use as a transmission link...*(See claim 28, lines 6-8). In the remarks filed 14 October 2008, the Applicant did not cite any part of the specification which would support the amended claim. The Examiner interprets the claim as relating to the "self-configuring feature" described in paragraphs 0071-0075, because the cited paragraphs are the only supporting text for the testing and allocation of a channel. The specification does not describe the manner in which the channel is tested or qualified as reflected in the amended claim. The specification does not describe transmitting "real-time audiovisual content from the first repeater to a next repeater in the chain at a throughput of at least 11 Mbps..."; instead, the specification merely describes "a processor in the source access point

executes a program or algorithm that determines an optimal set of frequency channels allocated for use by each access point or repeater" (See paragraph 0071.) Furthermore, the specification merely describes utilizing either the 802.11a, 802.11b, or 802.11g protocols (See paragraph 0058), without any mention of the bandwidth or throughput, and goes on to mention "there is no specific limit on the number or type of transceivers incorporated in the access point or repeaters utilized in the wireless network of the present invention" (See paragraph 0079). Even if the Examiner were to interpret the claim limitations as reading on the "automatic detection of channel conflict" described in paragraphs 0076-0078, the process is only described in relation to a cordless phone without mentioning the throughput. More simply, the specification does not describe; therefore, *testing the channel by sending data that includes real-time audiovisual content ... at a throughput of at least 11 Mbps...* represents new matter.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 28-30, and 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ganz et al. (US 6,584,080 B1), hereinafter referred to as Ganz, in view of Oura (US 6,115,369); and Ganz in view of Heinonen et al. (US 6,968,153 B1), hereinafter referred to as Heinonen.

Regarding claim 28, Ganz discloses a wireless burstable communications repeater, which comprises:

A tuning on a channel of a frequency band by a first repeater to determine whether the channel is available for use; testing the channel for reliability by sending data from the first repeater to a next repeater in the chain, and receiving data back from the next repeater by the first repeater; and allocating the channel for use as a transmission link between the first and next repeaters (Referring to Figures 1 and 4, the wireless burstable communications repeater (WBCR) comprises management software **230** which provides for automatic link testing. Radio segments are automatically tested (tuning on a channel of a frequency band by a first repeater) at regular intervals to confirm the viability of the specific link (available for use). The test is conducted at the data link level by sending special control (testing by sending data from the first repeater) data packets to a specified designation (a next repeater), which then turns the data packets around and echoes them back to the source node (receiving data back from the next repeater by the first repeater). The link tests isolates problem links and steers traffic away from the problem links; thereby, configuring links for use between repeaters. See column 12, lines 22-52.)

Ganz does not disclose *testing by sending data that includes real-time audiovisual content at a throughput of at least 11 Mbps.*

Ganz teaches the testing of a channel through the transmission of special control data packets, but does not explicitly disclose whether the data packets comprise audiovisual content and a transmission rate of at least 11 Mbps. Ganz further teaches that the radio element circuits incorporate an IEEE 802.11 specification at the 2.4GHz frequency (See column 7, lines 11-19.)

Heinonen teaches an apparatus, method and system for a Bluetooth™ repeater, which comprises pairing the transceiver with an IEEE 802.11a (5 GHz frequency band which operates above 11 Mbps), b (2.4 GHz) and g transceiver (which operate above 11 Mbps) to extend the radius of the repeaters range (Referring to Figure 1C, see column 4, lines 4-21.)

The claim is rejected under 35 U.S.C. 103 as being unpatentable over Ganz in view of Heinonen. Ganz teaches a multi-channel distributed wireless repeater network, which wirelessly repeats transmissions on separate channels to avoid possible interference from neighboring wireless repeaters. Though Ganz does not explicitly disclose special control data packets comprising real-time audiovisual content, the special control data packets are functionally equivalent to formatted real-time audiovisual content because the special control data packets and real-time audiovisual data are utilized for the same purpose of testing the signal quality. Furthermore, the claim does not set forth any structural or functional limitations which would differentiate the two. Heinonen teaches pairing different protocol receivers together to repeat data transmissions at both high and low speed transmission. Because both Ganz and Heinonen teach methods and devices for wirelessly repeating transmission, it would have been obvious to one of ordinary skill in the art to substitute wirelessly repeating transmissions across time slots for wirelessly repeating transmissions across channels to achieve the predictable result of expanding network coverage for wireless devices utilizing high speed wireless repeaters. Both Ganz and Heinonen accomplish the same goal of expanding network coverage for a wireless device, albeit through different methods. The instant invention is merely a combination of a well-known IEEE 802.11a/b/g network with the well-known process of high speed data transmission, as taught by

Ganz and Heinonen, respectively. Therefore, the claims are properly rejected under 35 U.S.C. 103 as being unpatentable over Ganz in view of Heinonen.

Ganz does not disclose *the first repeater and the next repeater being physically obstructed from a line-of-sight view and the first repeater transmitting during even time intervals and receiving during odd time intervals, the next repeater transmitting during the odd time intervals and receiving during the even time intervals.*

The Examiner interprets the Applicant's claimed invention as a method or device comprising a first repeater, which receives on a first time slot and transmits on a second time slot, and a second repeater, which receives on a second time slot and transmits on a first time slot. Oura teaches a wireless repeating method and wireless repeating unit, which comprises a repeater (first repeater) and base station a (second repeater), which may operate in either a line-sight or obstructed line-of-sight as typical of traditional prior-art wireless systems (Referring to Figure 4). The Time Division Duplex communication system, comprises a frame divided into times slot halves comprising SFa (odd time interval) and SFb (even time interval) (Referring to Figure 4). The repeater (first repeater) receives transmission during SFa (odd time interval) and repeats transmission during SFb (even time interval), while base station A (second repeater) transmits data during SFa (odd time interval) and receives data during SFb (even time interval) (Referring to Figure 4, see column 6 lines 1-33 and 38-58). Oura teaches wireless repeating across time slots utilizing the same frequency, which is equivalent to the Applicant's instant invention that wireless repeats calls across time slots utilizing the same frequency.

The claim is rejected under 35 U.S.C. 103 as being unpatentable over Ganz in view of Oura. Ganz teaches a multi-channel distributed wireless repeater network, which wireless

repeats transmissions on separate channels to avoid possible interference from neighboring wireless repeaters. Oura teaches a wireless repeating system, which wireless repeaters transmissions on separate time slots to avoid possible interference from neighboring devices. Because both Ganz and Oura teach methods and devices for wirelessly repeating transmission, it would have been obvious to one of ordinary skill in the art to substitute wirelessly repeating transmissions across time slots for wirelessly repeating transmissions across channels to achieve the predictable result of expanding network coverage for wireless devices utilizing wireless repeaters. Both Ganz and Oura accomplish the same goal of expanding network coverage for a wireless device, albeit through different methods. The instant invention is merely a combination of a well-known IEEE 802.11 network with the well-known process of data synchronization via TDMA, as taught by Ganz and Oura, respectively. Therefore, the claims are properly rejected under 35 U.S.C. 103 as being unpatentable over Ganz in view of Oura.

More simply, the claimed invention is a combination of channel testing, high speed repeaters, and TDMA scheduling. Ganz teaches the well-known process of channel testing for wireless repeaters. Heinonen teaches high speed repeaters. And Oura teaches utilizing TDMA scheduling for expanding coverage of a wireless repeater. The claimed invention is merely a combination of well-known prior art methods, which do not yield unpredictable results. The claimed invention is merely a combination of the teachings of Ganz, Heinonen, and Oura to achieve the predictable result of channel testing high-speed repeaters utilizing TDMA scheduling.

Regarding claim 29, the primary reference further teaches *repeating (a)-(c) for each repeater in the chain* (Referring to Figures 1 and 4, all of the radio segments, between repeaters

and users, are tested at regular intervals to confirm the viability of the specific link. See column 12, lines 22-52.)

Regarding claim 30, the primary reference further teaches *repeating (a)-(c) for each repeater in the chain with each transmission link utilizing a different channel* (Referring to Figures 1, 3, and 4, WBCR comprises management software **230** which provides for automatic link testing. Radio segments are automatically tested at regular intervals to confirm the viability of the specific link. In the “repeater chain” comprising WBCR’s **10** and **100**, utilizing a frequency hopping spread spectrum, the chain would include different hopping sequences that enable the segments between repeaters to coexist in the same geographical area on different channels. See column 12, lines 22-52 and column 7, lines 17-36.)

Regarding claim 33, the primary reference further teaches *wherein (a)-(c) are performed by at least one processor of the WLAN* (Referring to Figures 1, 3, and 4, WBCR, part of the WLAN, comprises management software **230** which provides for automatic link testing utilizing a CPU. See column 12, lines 22-52.)

Regarding claim 34, the primary reference further teaches *wherein (a)-(c) are performed by at least one processor of an access point that functions as a data source* (Referring to Figures 1, 3, and 4, the WBCR comprises management software **230** which provides for automatic link testing. By repeating data and performing the generation and communication of testing data packets, the WBCR acts as a data source. See column 12, lines 22-52.)

Regarding claim 35 as explained in the rejection statement of claim 28, Ganz discloses all of the claim limitations of claim 28 (parent claim).

Ganz does not disclose *wherein the frequency band comprises a 5GHz frequency band*

Ganz teaches that the radio element circuits incorporate an IEEE 802.11 specification at the 2.4GHz frequency (See column 7, lines 11-19.) Heinonen teaches an apparatus, method and system for a BluetoothTM repeater, which comprises pairing the transceiver with an IEEE 802.11a (5 GHz frequency band), b (2.4 GHz) and g transceiver to extend the radius the of repeaters range (Referring to Figure 1C, see column 4, lines 4-21.)

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the multiprotocol transceivers utilizing IEEE 802.11a of Heinonen in the wireless repeater system of Ganz. Essentially, one of ordinary skill in the art at the time of the invention could have easily combined the prior art elements (wireless repeater of Ganz and IEEE 802.11a protocol of the multi-protocol wireless repeater of Heinonen) according to known methods to yield predictable results. Although Ganz does not explicitly disclose utilizing a 5GHz frequency, taught by Heinonen, they do teach utilizing an IEEE 802.11 protocol for their wireless repeater at the 2GHz frequency. Heinonen teaches that one of ordinary skill in the art could have modified a 2GHz frequency repeater to utilize the 5GHz frequency band too. One of ordinary skill in the art at the time of the invention would have readily recognized that a single repeater operating in the 5GHz frequency band was predictable. Therefore, it would have been obvious to modify the wireless repeater operating in the 2GHz frequency band of Ganz to operate as a wireless repeater in the 5Ghz frequency band as taught by Heinonen.

Regarding claim 36, the primary reference further teaches *wherein the frequency band comprises a 2.4GHz frequency band* (Referring to Figures 1, 3, and 4, the WBCR operates in the 2.4GHz band. See column 7, lines 17-51.)

5. Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ganz (US 6,584,080 B1) in view of Heinonen (US 6,968,153 B1) in further view of Lau et al. (US 6,690,657 B1), hereinafter referred to as Lau.

Regarding claim 31 as explained in the rejection statement of claim 28, Ganz discloses all of the claim limitations of claim 28 (parent claim).

Ganz does not disclose *monitoring signal quality of the channel during data transmissions*.

Lau teaches a multichannel wireless repeater, which comprises a control circuit **130** that tests the relative strength of signals received on a channel, and then selects a switch configuration for repeating mode that corresponds with the strongest received signal (Referring to Figure 14, see column 8, lines 3-16.) Also, Lau teaches that in a FHSS systems, where a total of twelve hopping frequencies may be allocated, for example, three channels may be used by the repeaters and T/R modules where the channels are based on a single hopping sequence. Channels **CH1**, **CH2**, and **CH3** can hop in a manner that maintains three hopping frequencies of separation between any two active channels. And groups of channels with common suffixes can be simultaneously active and maintain good separation and apparent frequency hop randomness in the network (Referring to Figures 11 and 12, see column 7, lines 16-28.)

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the signal strength measurement and channeling switching of Lau in the system of Ganz. One of ordinary skill in the art at the time of the invention would have been motivated to do so in order to expand the area of coverage serviced by the wireless repeaters while

simultaneously allowing for the active transmission of other devices, as taught by Lau (See column 3, lines 14-28 and column 4, lines 6-16.)

Regarding claim 32 as explained in the rejection statement of claim 28, Ganz discloses all of the claim limitations of claim 28 (parent claim).

Ganz does not disclose *switching to a different channel if the signal quality falls below a certain level.*

Lau teaches a multichannel wireless repeater, which comprises a control circuit **130** that tests the relative strength of signals received on a channel, and then selects a switch configuration for repeating mode that corresponds with the strongest received signal (Referring to Figure 14, see column 8, lines 3-16.) Also, Lau teaches that in a FHSS systems, where a total of twelve hopping frequencies may be allocated, for example, three channels may be used by the repeaters and T/R modules where the channels are based on a single hopping sequence. Channels **CH1**, **CH2**, and **CH3** can hop in a manner that maintains three hopping frequencies of separation between any two active channels. And groups of channels with common suffixes can be simultaneously active and maintain good separation and apparent frequency hop randomness in the network (Referring to Figures 11 and 12, see column 7, lines 16-28.)

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the signal strength measurement and channeling switching of Lau in the system of Ganz. One of ordinary skill in the art at the time of the invention would have been motivated to do so in order to expand the area of coverage serviced by the wireless repeaters while simultaneously allowing for the active transmission of other devices, as taught by Lau (See column 3, lines 14-28 and column 4, lines 6-16.)

Response to Arguments

6. Applicant's arguments with respect to claims 28-36 have been considered but are moot in view of the new ground(s) of rejection as necessitated by the Applicant's amendment to independent claim 28.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DONALD L. MILLS whose telephone number is (571)272-3094. The examiner can normally be reached on 9:00 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Donald L Mills/
Examiner, Art Unit 2416
January 5, 2009